

organism, conformably to the general tracing of the plan of structure proper to its species, is always for it a condition of existence. The term arrest of development, is not meant to express an embryonic condition, permanent for some animals, transitory for others, but a form which has remained quite similar to that which the embryos of these animals, and of others derived from the same fundamental type, possess at a certain period of their existence.

What Milne Edwards calls the "economy of means," by which the rich diversity of products, to be found in the animal creation, has been brought about, is most wonderful. One of the most powerful causes of this rich diversity, is the inequality in the degree of perfection reached by animals. All animals are equally perfect in their kind, as Cuvier says: they are perfectly fitted for the part they are to play, but this part is far from having always the same extent and importance.

It is only in the past few years that the true point of view under which the physiological study of monstrosities should be embraced has been rightly understood. All the facts and all the laws of teratology are only the consequences of embryonic laws and facts; and embryogeny, as the science is now understood, was only begun some fifty years ago. Embryogeny has for its fundamental basis, this principle, that the organs do not exist entirely formed, from the beginning, but, on the contrary, are formed at epochs, that vary for each of them. Necessarily very small and very simple when first formed, these organs increase in size and undergo developments.

Universally, until the 17th century, all monsters were destroyed. It was held to be a bold novelty when Riolan, one of the most distinguished men of his time, declared that six-fingered children might be allowed to live. Riolan taught, moreover, that monsters, half man and half animals, should rather be killed; as to monsters, made in the likeness of the devil, if allowed to live, they must be constantly shut up and kept concealed.¹ From the superstitions of that time, in the course of a century and a half, the science of monstrosities has risen to the highest considerations of natural philosophy.

ART. XIV.—*Spontaneous Rupture of the Eye.* By ANDREW FLEMING, M. D., late Resident Physician to the Pennsylvania Hospital.

REUBEN POND, aged 50, seaman, a native of New Jersey, was admitted into the Pennsylvania Hospital Sept. 22, 1856.

Two years ago he had some disease of his right eye, which lasted for a month, when he lost the use of it entirely. Since that time it gave him no trouble or uneasiness until two days before his accident, when he suffered from a severe, acute and throbbing pain in it, but without increase of size.

¹ Riolan was Dean of the Faculty of Medicine, in Paris; he died in 1600.
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He has been temperate, has, with the exception of the above, always been in good health, and has received no injury which could have caused his present condition. He had been engaged, during the day, in loading a sloop with manure; which service required him to stoop a great deal, had quitted his work, and while standing on the wharf conversing with a comrade, he suddenly felt a pain as of a knife cutting across his eye, when a gush of blood started from the sightless globe.

On admission he was tossing about in great agony, perfectly sensible, with a weak, rapid pulse and cold skin. On the outside of the lids was a clot, about the size of the eye, resting upon the cheek. When this was removed, a rent was found extending clear across the cornea and a copious and steady stream of arterial blood welling up through it. After cleansing the laceration carefully, no protrusion of the iris or crystalline lens could be perceived, and a probe introduced gave no indication of the presence of the latter. The eyeball was of the same size as the opposite one, and with the conjunctiva and lids presented a healthy appearance. The examination caused such exquisite pain, that a more minute inspection would have been injurious, and the presence of the blood behind the torn cornea rendered it difficult to recognize any alteration in the tissue. It is to be regretted, as in many cases of interest, that the knowledge of the antecedents had to be obtained from the patient alone.

A full anodyne was immediately given, and a piece of lint, dipped in tinct. ferri chlor., inserted in the eyeball through the opening, and retained by an adhesive strip. He was then put to bed, sol. morph. s. given in sufficient doses to quiet him, and, when reaction had been fully established, cold was applied.

Sept. 23. No hemorrhage has taken place since the introduction of the lint; there is some swelling of the face and œdema of the eyelids; he has slept a little and feels much better.

The case now progressed favourably; suppuration took place, followed by healthy granulation, the wound in the cornea healed, the eyeball was slightly diminished in size, and he was discharged cured Oct. 31, 1856.

The cases are numerous and the circumstances very varied where spontaneous effusion of blood, without rupture of the cornea, takes place in the eyeball, while those in which hemorrhage, with rupture of the cornea, does take place or would be likely to do so, are confined to malignant disease of the orbit, glaucoma (Mackenzie, *Practical Treatise*, and Desmarres, *Mal. des Yeux*), and aneurism. There being no reason, from the healthy appearance of the eye, and the absence of the lens, for supposing the existence of the first two, I shall dismiss them.

Aneurism is here found, as in other parts of the body, of two kinds.

Traumatic aneurism of the ophthalmic artery is a very rare disease, and so far as my inquiry goes, but three cases have been reported. Two of these are reported in the *Med. Chir. Transactions*, vol. xxii., by Geo. Busk, Esq., one occurring in his and the other in the practice of Mr Scott, surgeon to

London Hospital. The third is that of Mr. T. B. Curling in (*op. cit.*) vol. xxxvii. A very remarkable case of anastomotic aneurism of the orbit, resulting from injury, was treated by M. Velpeau, at la Charité (*Mal des Yeux de Mackenzie, trad. avec notes par S. Laugier et G. Richelot*). In the above cases the injuries received were of a violent kind, and followed by great enlargement of the eye with protrusion, and all the characteristics of aneurism. In each case the common carotid was ligated, and, with the exception of the last in which the life was saved, were successful, not only regarding the condition of the patient, but in restoring the use of the eye.

Of spontaneous aneurism, the number of cases is greater, and I shall enumerate but a portion collected. Mr. Guthrie (*Lec. on Oper. Surgery*) has given a description of a true aneurism of this class, of both ophthalmic arteries as verified by *post-mortem* examination. Others, whether of true or anastomotic character, have been given by the following authors, viz., Mr. Travers (*Med. Chir. Trans.*, vol. ii.), Mr. Dalrymple (*op. cit.*, vol. vi.), M. Jobert (*Mém. de l'Acad. Roy. de Médecine*, tome ix.), Mr. H. Haynes Walton (*Lancet*, 1852, vol. i.), M. Petrequin (*Comp. Rend. de l'Acad. des Sciences*, tome xxi.), and M. Bourguet (*Archives Générales*, 1856). Of these cases, in the first four the common carotid was ligated, and a perfect cure (with sight restored) effected; in the fifth, the common carotid was tied, but the pulsation soon returned, and one month after the galvano-puncturation was tried but without success—the patient died in a short time, and the last was cured by injection of perchloride of iron.

In all cases of aneurism of the orbit, whether of a traumatic or spontaneous character, there is considerable time required for the development of the disease, and there is no case in which, besides the symptoms peculiar to aneurism, there is not great enlargement and protrusion of the eye. From this, it would appear that the case of which I have given the details was not one of aneurism.

To explain the pathology of this lesion, it is necessary to suppose a varicose condition of the vessels within the eye, increased by the occupation at the time (Beer and Walton), with perhaps disease of their coats as described by Ignaz Meyr (*Constat's Jahresbericht*, 1851), and at the same time a ramolissement of the cornea (Mirault, Rosas and Stoeber) which offered no resistance to the tendency of the vessels to rupture.

ART. XV.—*Experiments with Bibron's Antidote to the Poison of the Rattle-snake.* By LOUIS DE VESSEY, Member of the Academy of Natural Sciences of Philadelphia.

In the January number of the *American Journal of the Medical Sciences*, Dr. William A. Hammond, U. S. Army, gives the details of several cases of

infection from rattlesnake poison in which Bibron's antidote was employed. The nature of the antidote and its history are given, and need not therefore be dwelt upon here.

The present paper, containing also the results of cases of poisoning from rattlesnake bite, in which this remedy was used, is contributed with the hope that a knowledge of its influence in obviating the ill effects which so generally follow the wounds made by this venomous reptile may be more extensively known throughout the country.

Whilst at Contra Costa, on my way to Fort Tejon, in California, a young boy was bitten by a rattlesnake. In a short time the wounded limb (the leg) was much swollen, and there was a good deal of pain in the part; his parents, refusing my services, sent for a physician. His remedies, however, were unavailing; the boy was completely prostrated, and the bitten limb and even the body were much swollen. The next morning, all hopes of recovery having been abandoned, I was requested to prescribe for him. I immediately gave him ten drops of the bromine mixture, diluted with a little alcohol and water, and four hours afterwards repeated the dose. Very soon after the first dose amendment commenced, and progressed rapidly after the second dose. Towards evening all swelling, pain, &c., had disappeared, and the next morning the boy was as well as if nothing bad happened.

In the vicinity of this fort rattlesnakes are found of very large size, and desirous of further testing the powers of the antidote, I procured three dogs and subjected them to a series of experiments with it after causing them to be bitten by the snakes.

The first dog (a small but powerful animal) was bitten twice, in a very short period, in the throat; the characteristic symptoms which usually follow infection of this kind soon supervened. I gave him ten drops of the mixture, and he almost immediately began to improve. The next morning he was well, but the swelling did not entirely disappear for two days.

The other two dogs yielded similar results, one dose of the antidote was always sufficient, except with the *crotalus lucifer*, which inflicted wounds of more than ordinary severity. Two or three doses, and even some alcohol, were generally necessary in bites from this species.

In all, I performed seventeen experiments on the three dogs, with seventeen different serpents, and invariably with a successful result. In the course of the investigations I found that dogs which had taken several doses of the bromine mixture, were for some time afterwards incapable of being infected by the poison of the rattlesnake.

I am sure experience will demonstrate the bromine mixture to be an effectual antidote to wounds from the rattlesnake—the most poisonous member of our fauna.

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